REMARKS

Claims 1-11 and 30-32 will be pending upon entry of this Amendment and Response To Office Action. Claims 1 and 7 have been amended to require the method for decreasing the appetite of an obese or overweight mammal to include the step of identifying the obese or overweight mammal and, further, to require the long-chain n-3 polyunsaturated fatty acid and long-chain n-6 polyunsaturated fatty acid to have 20 or more carbon atoms. Support for these amendments can be found throughout the instant specification (for example, generally in the instant specification on page 1, line 1 through page 2, line 31) and, more specifically, in the instant specification on page 16, lines 28-30, and claims 1 and 7. Claims 3 and 30 have been amended to correct typographical errors. Upon entry of this Amendment and Response to Office Action, Applicants respectfully request reconsideration and allowance of all pending claims.

1. Rejection of the Claims under 35 U.S.C. §103(a)

Reconsideration is requested of the rejection of claims 1-11 under 35 U.S.C. §103(a) as being unpatentable over Bogentoft (WO 87/03198) in view of The Merck Index (Monograph 5383, page 867), Brenna ("Efficiency of Conversion of [alpha]-Linolenic Acid to Long Chain n-3 Fatty Acids in Man", Current Opinion in Clinical Nutrition and Metabolic Care, 5(2): 127-132, March 2002, Abstract only), and Gil, et al. (U.S. 5,709,888).

Claim 1, as amended herein, is directed to a method for decreasing the appetite of an obese or overweight mammal. The

method comprises: identifying said obese or overweight mammal; and enterally administering to said mammal an amount of long chain n-3 polyunsaturated fatty acid effective to decrease the appetite of said mammal, wherein the polyunsaturated fatty acid has 20 or more carbon atoms. The polyunsaturated fatty acid is administered in the form of a triacylglycerol to treat obesity or overweight in mammals that are obese or overweight.

Bogentoft discloses enteric preparations in the forms of capsules, tablets, and microcapsules having an enteric coating resistant to gastric juices that dissolves only in the ileum. These enteric preparations contain a hydrophobic substance in combination with an emulsifier. The hydrophobic substance is thus delivered to the ileum, at which point it interacts with specific ileum receptors to induce satiety (page 1, paragraph 3). The enteric preparation is orally administered in a weight reducing dosage to a human. The hydrophobic substance can be a fatty acid having 6-28 carbon atoms, an ester or a salt thereof, a fatty alcohol having 6-28 carbon atoms or an ester thereof. As discussed in detail herein below, however, Bogentoft actually only disclose and enable fatty acids having up to 18 carbon atoms. The fatty acid can be saturated or unsaturated, and have a branched or a straight chain. The fatty acids include lauric acid, palmitic acid, stearic acid, oleic acid, ricinoleic acid, linoleic acid, and linolenic acid.

Significantly, Bogentoft fails to disclose administering an amount of long chain n-3 polyunsaturated fatty acid, wherein the long chain n-3 polyunsaturated fatty acid has 20 or more carbon atoms, effective in decreasing the appetite of an obese or

overweight mammal. Specifically, as described in the instant specification, and as required in amended claim 1, "long chain n-3 polyunsaturated fatty acid" refers to fatty acids having 20 or more carbons and having a double bond at the third carbon (*see* Specification at page 16, line 29 through page 17, line 7).

While Bogentoft discloses that its hydrophobic substance can be a fatty acid having from 6-28 carbons, Bogentoft fails to disclose administering a long chain n-3 polyunsaturated fatty acid having 20 or more carbon atoms as required in Applicants' claim 1. Specifically, Bogentoft provides the following examples of suitable fatty acids for use as its hydrophobic substance: lauric acid ($C_{12}H_{24}O_2$, having no double bonds); palmitic acid ($C_{16}H_{30}O_2$, having no double bonds); stearic acid ($C_{18}H_{36}O_2$, having no double bonds); oleic acid ($C_{18}H_{34}O_2$, having a double bond at the ninth carbon); ricinnoleic acid ($C_{18}H_{34}O_3$, having a double bond at the ninth carbon); linoleic acid ($C_{18}H_{32}O_2$, having a double bond at the sixth carbon); and linolenic acid ($C_{18}H_{30}O_2$, having double bonds at the third, sixth, and ninth carbons). At best, as noted by the Office, Bogentoft discloses a precursor of docosahexaenoic acid, that of linolenic acid. No where, however, does Bogentoft teach or disclose administering a long chain n-3 polyunsaturated fatty acid having 20 or more carbon atoms as its hydrophobic substance to be used in the enteric preparation administered for weight loss. This is a significant aspect of Applicants' claim 1.

Recognizing that the Bogentoft reference fails to make such a disclosure, the Office cites The Merck Index, Brenna, and Gil, et al. references in an attempt to arrive at each and every

limitation of Applicants' claim 1. Specifically, the Office cites The Merck Index, Brenna, and Gil, et al. for the teaching that some of the hydrophobic substances disclosed in Bogentoft, specifically linolenic acid, may inherently include the triacylgycerols of long chain n-3 polyunsaturated fatty acids as required in Applicants' claim 1.

The Merck Index discloses the formula and properties for linolenic acid. Specifically, The Merck Index discloses that linolenic acid is the same compound as alpha-linolenic acid.

Brenna discloses alpha-linolenic acid is a principal precursor for long chain polyunsaturated fatty acids such as eicosapentaenoic acid and docosahexaenoic acid. Studies have shown that humans of all ages can perform the conversion of alpha-linolenic acid to docosahexaenoic acid.

Gil, et al. disclose a new fat mixture for infant and adult nutrition that possesses adequate levels and ratios of polyunsaturated fats and long chain polyunsaturated fats of both the n-6 and n-3 series. The long chain n-6 polyunsaturated fats are derived from linoleic acid and the long chain n-3 polyunsaturated fats are derived from alpha-linolenic acid.

A close reading of the cited references, specifically, the Brenna reference, actually teaches away from showing that Bogentoft inherently includes the triacylgylcerols of long chain n-3 polyunsaturated fatty acids. Specifically, Brenna teaches that while tracer studies show that humans of all ages can perform the conversion of [alpha]-linolenic acid to docosahexaenoic acid, "studies generally agree that whole body conversion of [alpha]-linolenic acid to docosahexaenoic acid is

below 5% (emphasis added) in humans, and depends on the concentration of n-6 fatty acids and long chain polyunsaturated fatty acids in the diet."[1]

Based on the foregoing, one skilled in the art, reading these references, would not recognize the advantage of administering the preparation of Bogentoft to decrease the appetite of an obese or overweight mammal, as it is known that mammals, particularly humans, cannot efficiently and effectively breakdown the [alpha]-linolenic acid of Bogentoft's preparation to docosahexaenoic acid as required in the claimed invention. Furthermore, there is nothing in Bogentoft, however, that teaches or suggests the recognition for the need to directly administer a long chain n-3 polyunsaturated fatty acid having 20 or more carbon atoms, such as docosahexaenoic acid, itself to treat obesity. As such, Bogentoft (alone or in combination with cited references) fails to teach or suggest a method comprising enterally administering to an obese or overweight mammal an amount of a long chain n-3 polyunsaturated fatty acid having 20 or more carbon atoms effective to decrease the appetite of said mammal as required in claim 1.

Furthermore, it would not be obvious to one of skill in the art to modify the cited references to arrive at each and every limitation of Applicants' claim 1. Specifically, in order for the Office to show a *prima facie* case of obviousness, M.P.E.P. §2143 requires that the Office must meet three criteria: (1) the prior art references must teach or suggest all of the claim limitations; (2) there must be some suggestion or motivation,

[1] Brenna at abstract.

either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify/combine the references, and (3) there must be some reasonable expectation of success. An obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of the case. The common sense of those skilled in the art can demonstrate why some modifications and/or combinations would have been obvious where others would not.[2] As noted in the Examination Guidelines For Determining Obviousness Under 35 U.S.C. §103(a) in view of the Supreme Court decision in KSR Int'l Co. v. Teleflex, Inc., et al.[3], the Office must provide an explanation to support any obviousness rejection. The Office has failed to meet its burden under numbers (1) and/or (2) above, as the cited references, alone or in combination, fail to disclose each and every limitation of Applicants' amended claim 1, and there is no apparent reason to modify the references to arrive at each and every limitation of Applicants' amended claim 1. It simply would not have been obvious to one skilled in the art to arrive at Applicants' claimed combinations.

Significantly, as with the Bogentoft reference, The Merck Index, Brenna, and Gil, et al. references (alone or in combination with Yan, et al.) fail to disclose a method comprising identifying an obese or overweight mammal; and enterally administering to said mammal an amount of a long chain

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[2] Leapfrog Enterprises, Inc. v. Fisher-Price, Inc., No. 06-1402 (Fed. Cir. May 9, 2007) *See also* KSR Int'l Co. v. Teleflex, Inc., et al. 550 US____, 2007 WL 1237837 at 12 (2007).

[3] 550 US____, 2007 WL 1237837 at 12 (2007)

n-3 polyunsaturated fatty acid having 20 or more carbon atoms effective to decrease the appetite of said mammal. More specifically, no where do any of The Merck Index, Brenna, and Gil, et al. references disclose a method of treating obesity or overweight in a mammal by decreasing its appetite at all. These references were solely cited by the Office to show that linolenic acid, which is disclosed in Bogentoft, is a precursor for docosahexaenoic acid.

Applicants recognize that prior art is not limited just to the references being applied, but includes the understanding of one of ordinary skill in the art. The prior art references need not teach or suggest all of the claim's limitations, but in the cases where the references fail to teach all of the limitations, the Office must explain why the differences between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art. Applicants respectfully assert that the Office cannot make such an explanation for claim 1 as there is simply no reason to include administering a long chain n-3 polyunsaturated fatty acid having 20 or more carbons to the method of Bogentoft.

As noted above, Bogentoft already uses several hydrophobic substances, including linolenic acid, in its enteric preparation for the treatment of obesity. Furthermore, Brenna teaches that linolenic acid is a precursor of docosahexaenoic acid. As such, why would one skilled in the art recognize a need for administering another hydrophobic substance, particularly a long chain n-3 polyunsaturated fatty acid having 20 or more carbon atoms such as required in claim 1, to the preparation of

Bogentoft, particularly when its linolenic acid preparation will inherently break down to provide an amount of docosahexaenoic acid?

At best, a combination of the cited references (if proper, which, as discussed below, Applicants assert it is not) discloses administering the enteric preparation of Bogentoft comprising a hydrophobic substance such as linolenic acid and emulsifier to treat obesity. Completely lacking, however, is the step of administering a long chain n-3 polyunsaturated fatty acid having 20 or more carbon atoms of amended claim 1.

Moreover, even if the cited references did teach or disclose each and every element of Applicants' amended claim 1 (which, as noted above, Applicants respectfully assert that the references do not), the common sense of one of ordinary skill in the art would not have provided a reason to combine the cited references to arrive at Applicant's method of decreasing the appetite of an obese or overweight mammal of claim 1. More particularly, as noted above, a close reading of the cited references, may actually teach away from the suggested combination. Specifically, as recognized by the Supreme Court in KSR International Co. v. Teleflex, Inc., while an obviousness determination is not a rigid formula, the TSM (teaching, suggestion, motivation) test captures a helpful insight: A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the art. Although common sense directs caution as to a patent application claiming as innovation the combination of two known [elements] according to their established functions, it can be

important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does."[4] More particularly, a court must ask whether the improvement is more than the predictable use of prior-art elements according to their established functions.[5] If a person of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, §103 likely bars its patentability.

For the reasons set forth above, it is not foreseeable or predictable that one skilled in the art would simply combine the cited references to arrive at the specific method of Applicant's amended claim 1. As such, Applicants respectfully assert that the motivation suggested by the Office for combining the cited references does not meet the requirements as set forth in the Office's guidelines for evaluating an obviousness rejection. As the cited references fail to teach or suggest each and every element of Applicants' claim 1, and further, there is no apparent reason for one skilled in the art to combine the cited references to arrive at the method of amended claim 1, and as such, amended claim 1 is patentable over the Bogentoft, The Merck Index, Brenna, and Gil, et al. references.

Claims 2-6 depend directly or indirectly from claim 1 and are thus patentable for the same reasons as set forth above for claim 1 as well as for the additional elements they require.

Claim 7 is similar to claim 1 and further requires the step of administering an amount of long-chain n-6 polyunsaturated

[4] *Id.* at 5.
[5] *Id.*

fatty acid in combination with the long-chain n-3 polyunsaturated fatty acid to decrease the appetite of an overweight or obese mammal. Claim 7 is patentable over the cited references for the same reasons as claim 1 set forth above, as well as for the additional elements it requires.

Claims 8-11 depend directly or indirectly from claim 7. As such, claims 8-11 are patentable over the cited references for the same reasons as claim 7 set forth above, as well as for the additional elements they require.

2. Rejection of the Claims under 35 U.S.C. §103(a)

Reconsideration is requested of the rejection of claims 1-4, 6, and 30-32 under 35 U.S.C. §103(a) as being unpatentable over Phinney, et al. (WO 03/043570) in view of Visser, et al. ("Elevated C-Reactive Protein Levels in Overweight and Obese Adults", Journal of the American Medical Association, 1999; 282:2131-215).

Claim 1 is discussed above.

Phinney, et al. disclose formulations and methods for the treatment and/or amelioration of symptoms of inflammatory conditions and associated systemic inflammatory responses. Phinney, et al. disclose that elevated levels of C-reactive protein have been associated with these various inflammatory conditions. The compositions comprise a non-alpha tocopherol (especially gamma-, beta-, or delta-tocopherol) and one or more of an omega-3 fatty acid, such as docosahexaenoic acid (DHA) or a flavonoid.

Significantly, Phinney, et al. fail to disclose a method of identifying an obese or overweight mammal; and administering to said mammal an amount of long-chain n-3 polyunsaturated fatty acid effective to decrease the appetite of said mammal. These are requirements of Applicants' claim 1.

Recognizing that the Phinney, et al. reference fails to make such disclosures, the Office cites the Visser, et al. reference for combination with Phinney, et al. in an attempt to arrive at each and every limitation of Applicants' claim 1. Specifically, Visser, et al. is cited for its disclosure of recognizing that persons that were clinically overweight or obese were more likely to have an elevated C-reactive protein level as compared to persons of normal weight in a study of 16,616 men and nonpregnant women aged 17 years or older.

In order for the Office to show a *prima facie* case of obviousness, M.P.E.P. §2143 requires that the Office must meet three criteria: (1) the prior art references must teach or suggest all of the claim limitations; (2) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references, and (3) there must be some reasonable expectation of success. An obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of the case. The common sense of those skilled in the art can demonstrate why some modifications and/or combinations would have been obvious where others would

not.[6] As noted above, and in the Examination Guidelines For Determining Obviousness Under 35 U.S.C. §103(a) in view of the Supreme Court decision in KSR Int'l Co. v. Teleflex, Inc., et al.[7], the Office must provide an explanation to support any obviousness rejection. The Office has failed to meet its burden under numbers (1) and/or (2) above, as the cited references, alone or in combination, fail to disclose each and every limitation of Applicants' amended claim 1, and there is no apparent reason to modify/combine the references to arrive at each and every limitation of Applicants' amended claim 1. It simply would not have been obvious to one skilled in the art to arrive at Applicants' claimed combinations.

As noted above, at best, Visser, et al. (alone, or in combination with Phinney, et al.) teach that overweight and obese humans between the ages of 17 and older are more likely to have elevated C-reactive protein levels, thereby indicating a low-grade systemic inflammation. While Visser, et al. disclose a correlation between elevated C-reactive protein levels and obese humans, no where is it taught or suggested that an obese human can be identified by finding elevated C-reactive protein levels. More specifically, one skilled in the art would not, and could not, identify an obese human solely by measuring C-reactive protein levels. Specifically, as disclosed in Phinney, an elevated C-reactive protein levels is a symptom of inflammatory conditions and associated systemic inflammatory

[6] Leapfrog Enterprises, Inc. v. Fisher-Price, Inc., No. 06-1402 (Fed. Cir. May 9, 2007) *See also* KSR Int'l Co. v. Teleflex, Inc., et al. 550 US____, 2007 WL 1237837 at 12 (2007).
[7] 550 US____, 2007 WL 1237837 at 12 (2007)

responses, which can be found in obese humans and humans that are not obese.[8]

Furthermore, while the symptoms of the associated systemic inflammation may be treated using the composition of Phinney, et al., no where, however, in the cited references, alone or in combination, is a method of treating obesity or overweight in mammals by administering long-chain n-3 polyunsaturated fatty acids taught or suggested. As such, neither of the references, alone or in combination, teach or suggest identifying an obese or overweight mammal and treating the obesity or overweight in the mammal by administering long-chain n-3 polyunsaturated fatty acids as required by Applicants' amended claim 1.

Furthermore, no where in the cited references (or in the knowledge available to one skilled in the art) is there an apparent reason to combine or modify the references to arrive at each and every limitation of Applicants' claim 1. Specifically, as noted above, the Phinney, et al. reference is directed to treating symptoms of inflammatory conditions and associated systemic inflammatory responses using compositions comprising a non-alpha tocopherol especially gamma-, beta-, or delta-tocopherol) and one or more of an omega-3 fatty acid, such as docosahexaenoic acid (DHA) or a flavonoid. There is no teaching or suggestion of identifying an obese or overweight mammal for treatment of obesity or overweight by decreasing its appetite. Similarly, Visser, et al., which is related to recognizing the correlation of elevated C-reactive protein levels in overweight

[8] Specifically, as disclosed in Phinney, et al. at page 7, lines 13-16, inflammation is associated with a number of diseases, disorders, and

and obese adults, provides no teaching or suggestion to identify an obese or overweight mammal for treatment.

Furthermore, although there is potential overlap between the specific diseases (that of having elevated C-reactive protein levels) there is nothing in the references (alone, or in combination), to teach or suggest that administering the composition of Phinney, et al. will effect the treatment of obesity or overweight, which is identified in Visser, et al. This is especially true in the cases of overweight individuals who are otherwise healthy and not suffering from elevated C-reactive protein levels. As such, why would one skilled in the art modify the method of Phinney, et al. to identify an obese or overweight individual and administer the tocopherol composition to decrease appetite as required in the method of Applicants' claim 1?

Additionally, the common sense of one of ordinary skill in the art would not have provided a reason to modify the Phinney, et al. and Visser, et al. references to arrive at Applicant's method for decreasing the appetite of an obese or overweight mammal of claim 1. Specifically, as recognized by the Supreme Court in KSR International Co. v. Teleflex, Inc., while an obviousness determination is not a rigid formula, the TSM (teaching, suggestion, motivation) test captures a helpful insight: A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the art. Although common sense directs caution as to a patent application claiming as innovation the

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conditions.

combination of two known [elements] according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does."[9] More particularly, a court must ask whether the improvement is more than the predictable use of prior-art elements according to their established functions.[10] If a person of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, §103 likely bars its patentability.

For the reasons set forth above, it is not foreseeable or predictable that one skilled in the art would simply modify/combine the Visser, et al. reference with the Phinney, et al. reference to arrive at the specific methods of Applicant's amended claim 1. As such, Applicants respectfully assert that the motivation suggested by the Office for modifying/combining the cited references does not meet the requirements as set forth in the Office's guidelines for evaluating an obviousness rejection. As there is no apparent reason for one skilled in the art to modify/combine the methods of Phinney, et al. with the methods of Visser, et al. to arrive at the methods of amended claim 1, amended claim 1 is patentable over the Phinney, et al. and Visser, et al. references.

As claims 2-4, 6, and 30-32 depend directly or indirectly from claim 1, claims 2-4, 6, and 30-32 are patentable for the same reasons as claim 1.

[9] *Id.* at 5.
[10] *Id.*

CONCLUSION

In light of the foregoing, Applicants request withdrawal of the rejections of claims 1-11 and 30-32 and allowance of all pending claims. The Commissioner is hereby authorized to charge a fee in the amount of $1,050.00 for a three month extension and any additional government fees which may be required to Deposit Account No. 01-2384.

Respectfully Submitted,

/Christopher M. Goff/

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